

General

Guideline Title

Guidelines for the management of hiatal hernia.

Bibliographic Source(s)

Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). Guidelines for the management of hiatal hernia. Los Angeles (CA): Society of American Gastrointestinal and Endoscopic Surgeons (SAGES); 2013 May. 42 p. [176 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

Definitions of the levels of evidence (+, ++, +++, +++) and the grades of the recommendations (weak or strong) are provided at the end of the "Major Recommendations" field.

Diagnosis

1. Hiatal hernia can be diagnosed by various modalities. Only investigations which will alter the clinical management of the patient should be performed (+++, strong).

Indications for Surgery

2. Repair of a type I hernia in the absence of reflux disease is not necessary (+++, strong).
3. All symptomatic paraesophageal hiatal hernias should be repaired (+++, strong), particularly those with acute obstructive symptoms or which have undergone volvulus.
4. Routine elective repair of completely asymptomatic paraesophageal hernias may not always be indicated. Consideration for surgery should include the patient's age and comorbidities (+++, weak).
5. Acute gastric volvulus requires reduction of the stomach with limited resection if needed (+++, strong).

Repair of Hiatal Hernia During Bariatric Operations

6. During operations for Roux-en-Y gastric bypass, sleeve gastrectomy and the placement of adjustable gastric bands, all detected hiatal hernias should be repaired (+++, weak).

Predictors of Outcome

7. Postoperative nausea and vomiting should be treated aggressively to minimize poor outcomes (++, strong).

Technical Considerations

Operative Approach-Transthoracic or Transabdominal; Laparoscopic or Open

8. Hiatal hernias can effectively be repaired by a transabdominal or transthoracic approach (++++, strong). The morbidity of a laparoscopic approach is markedly less than that of an open approach (++, strong).
9. Laparoscopic hiatal hernia repair is as effective as open transabdominal repair, with a reduced rate of perioperative morbidity and with shorter hospital stays. It is the preferred approach for the majority of hiatal hernias (++++, strong).

Hernia Sac Excision

10. During paraesophageal hiatal hernia repair the hernia sac should be dissected away from mediastinal structures (++, strong), and then preferably excised (++, weak).

Reinforced Repair

11. The use of mesh for reinforcement of large hiatal hernia repairs leads to decreased short term recurrence rates (+++ , strong).
12. There is inadequate long-term data on which to base a recommendation either for or against the use of mesh at the hiatus.

Fundoplication

13. A fundoplication must be performed during repair of a sliding type hiatal hernia to address reflux. A fundoplication is also important during paraesophageal hernia repair (++, weak).
14. In the absence of achalasia, tailoring of the fundoplication to preoperative manometric data may not be necessary (++, weak).

Short Esophagus

15. A necessary step of hiatal hernia repair is to return the gastroesophageal junction to an infradiaphragmatic position (+++ , strong).
16. At the completion of the hiatal repair, the intra-abdominal esophagus should measure at least 2-3 cm in length to decrease the chance of recurrence (++, weak). This length can be achieved by combinations of mediastinal dissection of the esophagus and/or gastropasty (++++, strong).

Gastropexy

17. Gastropexy may safely be used in addition to hiatal repair (++++, strong).
18. Gastrostomy tube insertion may facilitate postoperative care in selected patients (++, strong).
19. Hernia reduction with gastropexy alone and no hiatal repair may be a safe alternative in high-risk patients but may be associated with high recurrence rates (++, weak). Formal repair is preferred (++++, strong).

Postoperative Management

Medical Management

20. With early postoperative dysphagia common, attention should be paid to adequate caloric and nutritional intake (+, strong).

Postoperative Contrast Studies

21. Routine postoperative contrast studies are not necessary in asymptomatic patients (+++ , strong).

Revisional Surgery

22. Revisional surgery can safely be undertaken laparoscopically by experienced surgeons (+++ , strong).

Pediatric Considerations

Indications for Surgery

23. Symptomatic hiatal hernias in children should be surgically repaired (++, weak).
24. A laparoscopic approach in children is feasible. Age or size of the hernia should not be an upfront contraindication to laparoscopy (++, weak).

Technical Considerations

25. Gastroesophageal reflux in pediatric patients with a hiatal hernia should be addressed by a concomitant anti-reflux procedure (++, weak).
26. The current standard of care in children is either excision of the hernia sac or disconnection of the sac from the crura (+++, weak).
27. To lower the risk of postoperative paraesophageal hernia after fundoplication in the pediatric population, minimal hiatal dissection should be performed (++, weak).
28. Plication of the esophagus to the crura may decrease recurrence in children (+, weak).

Definitions:

Grading of Recommendations Assessment, Development and Evaluation (GRADE)* System for Rating the Quality of Evidence for Society of American Gastrointestinal Endoscopic Surgeons (SAGES) Guidelines

Quality of Evidence	Definition	Symbol Used
High quality	Further research is very unlikely to alter confidence in the estimate of impact	++++
Moderate quality	Further research is likely to alter confidence in the estimate of impact and may change the estimate	+++
Low quality	Further research is very likely to alter confidence in the estimate of impact and is likely to change the estimate	++
Very low quality	Any estimate of impact is uncertain	+

Grading of Recommendations Assessment, Development and Evaluation (GRADE)* Recommendations Based on the Quality of Evidence for Society of American Gastrointestinal Endoscopic Surgeons (SAGES) Guidelines

Strong: It is very certain that benefit exceeds risk for the option considered.

Weak: Risk and benefit well balanced, patients and providers faced with differing clinical situations likely would make different choices, or benefits available but not certain regarding the option considered.

*Adapted from Guyatt GH, Oxman AD, Vist GE, et al; GRADE Working Group. GRADE: An emerging consensus on rating quality of evidence and strength of recommendations. BMJ 2008; 336:924-6.

Clinical Algorithm(s)

An algorithm titled "Diagnostic Pathway for GERD and for Hiatal Hernia" is provided in the original guideline document.

Scope

Disease/Condition(s)

Hiatal hernia

Guideline Category

Management

Treatment

Clinical Specialty

Gastroenterology

Pediatrics

Intended Users

Physicians

Guideline Objective(s)

To assist physicians' and patients' decisions about the appropriate use of laparoscopic surgery for hiatal hernia

Target Population

Patients with hiatal hernia

Interventions and Practices Considered

1. Diagnosis and evaluation using various modalities
2. Surgical approaches:
 - Transabdominal
 - Transthoracic
 - Laparoscopic
 - Open
3. Operative technical considerations:
 - Hernia sac excision
 - Repair of hiatal hernia during bariatric operations
 - Mesh reinforcement of large hiatal hernia repairs
 - Fundoplication
 - Return of the gastroesophageal junction to an infradiaphragmatic position
 - Esophageal lengthening
 - Gastropexy
 - Gastrostomy tube insertion
4. Postoperative care:
 - Aggressive management of postoperative nausea and vomiting
 - Adequate caloric and nutritional intake
5. Revisional surgery
6. Pediatric surgical management:
 - Laparoscopy
 - Concomitant anti-reflux procedure
 - Excision of the hernia sac or disconnection of the sac from the crura
 - Minimal hiatal dissection
 - Plication of the esophagus to the crura

Major Outcomes Considered

- Incidence and severity of complications
- Morbidity and mortality
- Rate of hernia recurrence

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

A systematic literature search was performed on PubMed in February 2011. A further search directed towards the pediatric literature was performed in February 2013. The search strategies were limited to human articles and are shown in Appendix 2 of the original guideline document. 392 relevant articles in the past 5 years were identified. The pediatric-specific search yielded 52 articles. The abstracts were reviewed and divided into the following categories:

- a. Randomized studies, meta-analyses, and systematic reviews
- b. Prospective studies
- c. Retrospective studies
- d. Case reports
- e. Review articles

Randomized controlled trials (RCTs), meta-analyses, and systematic reviews were selected for further review, along with prospective and retrospective studies that included at least 20 patients. Studies with smaller samples were considered when additional evidence was lacking, and if a specific point was highlighted. The most recent reviews were also included. All case reports, older reviews, and smaller studies were excluded. According to these exclusion criteria, 153 articles were reviewed. A further 15 references were included in the pediatric-specific search, after exclusions. Whenever the available evidence from high quality studies was considered to be adequate, lower evidence level studies were not considered. Duplicate publications were considered only once.

The reviewers graded the level of evidence and manually searched the bibliography of each article for additional articles that may have been missed during the original search. This stage of the search continued to November 2011. The additional relevant articles (n=96) found were also included in the review.

Number of Source Documents

A total of 248 graded articles relevant to this guideline were reviewed.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Grading of Recommendations Assessment, Development and Evaluation (GRADE)* System for Rating the Quality of Evidence for Society of American Gastrointestinal Endoscopic Surgeons (SAGES) Guidelines

Quality of Evidence	Definition	Symbol Used
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Low quality	Further research is very likely to alter confidence in the estimate of impact and is likely to change the estimate	++
Very low quality	Any estimate of impact is uncertain	+

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review

Description of the Methods Used to Analyze the Evidence

To facilitate review by multiple reviewers, these articles were divided into the following topics:

- a. Definitions, classification and pathophysiology
- b. Diagnosis
- c. Natural history and indications for surgery
- d. Preoperative assessment
- e. Technical considerations:
 - i. Transthoracic vs. transabdominal
 - ii. Hernia sac excision vs. simple reduction
 - iii. Laparoscopic vs. open
 - iv. Mesh cruroplasty vs. no reinforcement
 - v. Fundoplication vs. no anti-reflux procedure
 - vi. Gastropexy vs. no gastric fixation
- f. Outcome
- g. Predictors of success
- h. Revisional surgery
- i. Pediatric considerations

Both the quality of the evidence and the strength of the recommendation for each of the guidelines were assessed according to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system. See the "Rating Scheme for the Strength of the Evidence" field.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Both the quality of the evidence and the strength of the recommendation for each of the guidelines were assessed according to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system. See the "Rating Scheme for the Strength of the Recommendations" field.

Rating Scheme for the Strength of the Recommendations

Grading of Recommendations Assessment, Development and Evaluation (GRADE)* Recommendations Based on the Quality of Evidence for Society of American Gastrointestinal Endoscopic Surgeons (SAGES) Guidelines

Strong: It is very certain that benefit exceeds risk for the option considered.

Weak: Risk and benefit well balanced, patients and providers faced with differing clinical situations likely would make different choices, or benefits available but not certain regarding the option considered.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

Guidelines are developed under the auspices of the Society of American Gastrointestinal and Endoscopic Surgeons and its various committees, and approved by the Board of Governors. Each clinical practice guideline has been systematically researched, reviewed and revised by the Guidelines Committee, and reviewed by an appropriate multidisciplinary team.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate management of patients with hiatal hernia

Potential Harms

- Long-term safety related to the type of mesh used and placement technique in reinforced repair is important, with many similarities being drawn in the literature to the Angelchik prosthesis used as an anti-reflux barrier in past decades which was found to cause frequent erosions into the esophageal lumen. A limitation of the available data is the lack of long-term follow-up mesh implantation. Most reports are small case series with a median follow-up of less than 3 years. Complications are reported with all types of mesh, both synthetic and biologic, as well as of varying mesh geometry. Although mesh erosion is the most feared complication, other complications also can occur, such as esophageal stenosis, pericardial tamponade and effusion. Expert opinion suggests that synthetic mesh when placed as a bridge is more likely to have direct contact with the esophagus and as a result is probably associated with erosion. Bridging synthetic mesh should therefore be avoided.
- The risk of recurrence after paraesophageal hiatal hernia repair and fundoplication is higher in children who exhibit preoperative gagging, retching, and slow gastric emptying. The risk of recurrence was shown to be lower if the esophagus was plicated to the crus in one study of 464 children. Plication in this study, however, was associated with a higher incidence of other perioperative complications. Minimal as opposed to extensive hiatal dissection during the primary anti-reflux operation also decreased the risk of postoperative paraesophageal hernia from 30% to 7.8% in a randomized trial of 177 pediatric patients.

Qualifying Statements

Qualifying Statements

Disclaimer

Guidelines for clinical practice are intended to indicate preferable approaches to medical problems as established by experts in the field. These recommendations will be based on existing data or a consensus of expert opinion when little or no data are available. Guidelines are applicable to all physicians who address the clinical problem(s) without regard to specialty training or interests, and are intended to indicate the preferable, but not necessarily the only acceptable approaches due to the complexity of the healthcare environment. Guidelines are intended to be flexible. Given the wide range of specifics in any health care problem, the surgeon must always choose the course best suited to the individual patient and the variables in existence at the moment of decision. Guidelines are developed under the auspices of the Society of American Gastrointestinal and Endoscopic Surgeons and its various committees, and approved by the Board of Governors. Each clinical practice guideline has been systematically researched, reviewed and revised by the Guidelines Committee, and reviewed by an appropriate multidisciplinary team. The recommendations are therefore considered valid at the time of its production based on the data available. Each guideline is scheduled for periodic review to allow incorporation of pertinent new developments in medical research knowledge, and practice.

Limitations of the Available Literature

Despite the availability of several randomized controlled trials and meta-analyses, most available studies are either prospective or retrospective reports. Several limitations exist in the examined literature. First, the general methodological quality of the available trials is low due to small patient numbers, inadequate trial design or methodology, lack of standardization, and lack of objective outcome assessment. Only a few studies report a power analysis and define a main outcome variable. Thus, the validity of several of the pooled analyses of the available meta-analyses is hampered by statistically significant heterogeneity related to small sample size. In addition, the reporting of outcomes varies significantly, as does the follow-up period, making it difficult to combine and compare such data. Furthermore, there are several differences in the surgical technique used that may directly impact the outcomes of interest and introduce bias into the reported outcomes. Much of the literature regarding the management of hiatal hernias refers only to certain subtypes; other subtypes, particularly large symptomatic sliding Type I hernias are often overlooked, yet require coverage by these guidelines. Finally, the majority of the studies do not report details on the expertise of their surgeons, and most have been conducted in single institutions, making generalization of their findings difficult.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Clinical Algorithm

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Identifying Information and Availability

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2013 May

Guideline Developer(s)

Society of American Gastrointestinal and Endoscopic Surgeons - Medical Specialty Society

Source(s) of Funding

Society of American Gastrointestinal Endoscopic Surgeons (SAGES)

Guideline Committee

Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) Guideline Committee

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Financial Disclosures/Conflicts of Interest

Society of American Gastrointestinal Endoscopic Surgeons (SAGES) leadership members, committee members, and guidelines authors disclose real and potential conflicts on a yearly basis and whenever they change, and real and potential conflicts are mitigated through mechanisms approved by the SAGES Conflict of Interest Task Force.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the [Society of American Gastrointestinal and Endoscopic Surgeons \(SAGES\) Web site](#)

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Print copies: Available from the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), 11300 W. Olympic Blvd., Suite 600, Los Angeles, CA 90064; www.sages.org .

Availability of Companion Documents

None available

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on December 12, 2013.

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